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for nearly twenty-years, or during two-fifths of the entire period of the motion of *Sirius*, they do no more than render the connection extremely probable, and will as yet not decide definitely whether this companion be the perturbing body or another member of a more complex system. But as the Elements A differ from those given by Dr. Auwers, it is desirable to trace what effect these alterations of the elements have in explaining the irregularities of the observed Right Ascension and Declination of *Sirius*. This is a question to which I hope to return at a future opportunity.

Oxford University Observatory:
1881, *December* 8.

Note on Messrs. Campbell and Neison's Paper on the Parallactic Inequality, in the Supplementary Number of the Monthly Notices. By E. J. Stone, M.A., F.R.S.

I. Messrs. Campbell and Neison appear willing to leave the discussion of their treatment of the question of the irradiational enlargement of the Moon as it stands. I gladly accept their decision on this point: I am quite content to leave the discussion as it stands.

II. But I cannot allow to pass unchallenged the statements which Messrs. Campbell and Neison have been pleased to make respecting the correction which the Meridian Observations of the Moon, 1851–1858, as given in the Greenwich volume, 1859, require for the error of adopted semi-diameter.

The adopted semi-diameter is clearly stated by Sir G. B. Airy to be Adams's value. The following are the corrections which I have deduced from a discussion of the observed durations 1851–1858:—

Year.	No. of Observations.	Adams's value too large by
		″
1851	7	+0·43
1852	3	−0·71
1853	4	−0·97
1854	3	+1·17
1855	3	+0·94
1856	3	+1·77
1857	3	+0·76
1858	5	+1·02

The deduction of these values is troublesome, and requires some care, on account of the many changes which were made in the adopted quantities of the *Nautical Almanac*, 1851–1855. But, although the results for 1852 and 1853 are rather discordant, I

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can find nothing wrong in the work, and I believe they have been fairly deduced from the observations. If all the observations are given equal weight, the result is that Adams's semi-diameter is too large by 0″·51; whilst from all the observations made with the Transit-Circle 1851–1861 it would appear that Adams's semi-diameter is too large by 0″·63 to represent the observed durations.

I must leave Messrs. Campbell and Neison to explain how they justify the assertion "in all our results we have employed the observed value," whilst they assume in their work that Adams's semi-diameter is too *small* by 0″·18 to represent these observations. I need hardly point out that, unless Messrs. Campbell and Neison can prove that Adams's semi-diameter is too small by about 0″·18 to represent these observations 1851–1858, the very remarkable agreement between the values of the coefficient of the parallactic inequality, to which they appealed in the *Monthly Notices* for March 1881 as proving the existence of the forty-five-year period inequality in the expression for the Moon's longitude, no longer exists.

III. I next pass to the supposed effect of Mr. Ellis's personal error in observing the limbs of the Moon on the coefficient of the parallactic inequality 1843–1851. I give in the following table the actual differences of the longitudes of the centre as deduced from observations of each limb. This shows at once the effect of the error of the assumed diameter. It is clear that Messrs. Campbell and Neison are mistaken when they attribute the large value of the parallactic inequality given by the observations 1843–1851 to personal error in Mr. Ellis's observations of limbs.

1843–1851.

Date.	Longitude of Centre.		Observer.
	1☽ − 2☽.		
1843, May 13		−0·25	E.
Aug. 9	+1·68		M.
Dec. 6	+0·96		H.
1844, May 2		−2·43	R.
June 29	+1·10		E.
Sept. 26	+3·85		R.
1845, June 19	+2·67		H.
Sept. 15		−2·62	E.
1847, Mar. 31	+1·78		R.
May 29	+1·94		R.
July 27	+2·66		H.
1848, Feb. 18	0·00		R.
Mar. 19	+5·91		H.
April 17	+1·67		M.

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Date.	Longitude of Centre.		Observer.
	1☽ − 2☽.		
1848, Sept. 12	+1·93		H.
1849, Mar. 8	+0·95		H.
Aug. 3	+6·69		M.
1850, Mar. 27	+0·28		R.
Aug. 22	+0·42		R.
Oct. 20	+3·61		D.
1851, Feb. 15	+0·41		H.
May 14		−0·30	M.
June 13	+0·98		J. W. B.
July 12	+0·83		E.
Aug. 11	+1·25		W. E.
Sept. 9		−0·39	D.
Dec. 8	+2·51		R.

The observers are Messrs. Main, Henry, Richardson, Ellis, Dunkin, Breen, and William Ellis.

The error of the adopted semi-diameter is −0″·705 from the whole of the observations, and is +0″·235 from Mr. Ellis's observations alone.

The value of the coefficient of the parallactic inequality deduced directly from the observations with the adopted semi-diameter is

124″·52.

The value which would be given with the mean correction is, very approximately,

125″·26.

But, if we applied a correction deduced from Mr. Ellis's observations alone, we should still find a value

124″·39.

The value deduced by Messrs. Campbell and Neison, with a correction for the supposed forty-five-year period inequality, was

122″·75.

The excess of the observed value, even on the extreme supposition that Mr. Ellis's diameter should be alone used for the reduction of all the observations, is still 1″·6 over the computed value. How, then, can Messrs. Campbell and Neison assert that "with this correction the discordance vanishes"?